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Equilibrium Critical Phenomena In Fluids and Mixtures: A Comprehensive Bibliography With Key-Word Descriptors

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Equilibrium Critical Phenomena in Fluids and Mixtures:

A Comprehensive Bibliography with Key-Word Descriptors

Stella Michaels*, Melville S. Green*, and Sigurd Y. Larsen*

This bibliography of 1088 citations comprehensively covers relevant research conducted throughout the world between January 1, 1950 through December 31, 1967. Each entry is characterized by specific key word descriptors, of which there are approximately 1500, and is indexed both by subject and by author. In the case of foreign language publications, effort was made to find translations which are also cited.

Key words: Binary liquid mixtures; critical opalescence; critical phenomena; critical point; critical region; equilibrium critical phenomena; gases; liquid-vapor systems; liquids; phase transitions; ternary liquid mixtures; thermodynamics

1. Introduction

This bibliographical project was begun as an experiment in connection with the renewed research interest in the rather old subject of critical phenomena. Ever since its discovery in carbon dioxide by Thomas Andrews (1863)*, the phenomena in the neighborhood of the critical point of liquid-vapor transition and other analogous phenomena have given rise to numerous experimental investigations of greater or lesser permanent value.

The motivation of the project was to search out this vast literature in order that those papers of more than ephemeral interest would be available to the scientific community. Originally, the bibliography was intended to include the general field of second-order phase transitions as well as critical phenomena in the stricter sense and was to be divided into two parts - an historical part covering the period prior to 1950, and a modern part covering 1950 onward. It was quickly decided to defer the historical part and to limit the present bibliography to critical phenomena in a stricter sense.

The bibliography is intended to include all studies of equilibrium properties of the critical point of liquid-vapor systems and of binary and ternary liquid mixtures. Excluded were general studies which included the critical region but did not make a special study of it, simple measurement of critical constants, and compilations of data. The time period covered is from January 1, 1950 through December 31, 1967. Studies published in all major scientific languages except Chinese, in which adequate sources of information were available to us, were surveyed.

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* At the time of compilation of this material, Mrs. Michaels was a member of the Bibliography and Translation Unit, National Bureau of Standards Library; Dr. Green was Chief, Statistical Physics Section, Heat Division, Institute for Basic Standards; and Dr. Larsen was a member of the Statistical Physics Section, Heat Division. The present address for Mrs. Michaels is the Center for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, and for Dr. Green and Dr. Larsen, Temple University, Philadelphia, Pennsylvania 19122.

Each paper was analyzed and was associated with a number of key word descriptors with a primary division as to type of research, i.e., experimental, theoretical, or analytical being made first. Another primary categorization was made according to the type of system, namely, liquid-vapor and binary or ternary liquid mixtures. Other descriptors included property measured, theoretical method used, and the chemical name of the substance measured. Approximately 1500 distinct descriptors were used to describe the papers. Each paper is characterized by roughly seven to ten descriptors. A subject index is also included through which all papers described by a given key word can be identified.

All entries are cited in English. In the case of foreign language papers, the original language is noted in brackets. Whenever possible, translations of foreign language documents are also cited.

Authors' names appear in the citations as they were published in the original paper - initials in one case - full name in the next. But, all authors' names have been standardized in the author index.

In order to assure comprehensive coverage, not only were the major abstracting services used, but also systematic searches of selected publications were made. Listings of both appear elsewhere in this manuscript. The standard for abbreviations was that of the American Chemical Society and a list of these abbreviations is provided.

Here we take the opportunity to thank those individuals who were so helpful to us during the compilation of this bibliography. Miss Sarah Anne Jones, retired Chief of the Bureau Library in which large portions of our studies were made; Mr. William Sartain, Chief, Stack and Reader Division, Library of Congress, who made that vast and valuable collection accessible to us; Dr. Raymond Mountain, Chief, Statistical Physics Section, NBS, for his generous assistance; Mrs. Patricia Jacobs and Miss Nancye E. McBryde who typed the manuscript; and Miss Stella Gross who willingly handled the difficult task of putting the subject index together.

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*For details on Andrews' experiments see Miller's Chemical Physics, 1863, third edition and also Philosophical Transactions of the Royal Society, Vol. 159, Part II, (1869) pp. 575-590. For claims that the phenomena were discovered by D.I. Mendeléeff prior to 1863, see Annalen der Physik, 217, (1870) 618-626.

2. Bibliography

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Refractive index and Lorentz-Lorenz function for saturated argon, methane and carbon tetrafluoride.
J. Chem. Phys. 42, 4145-8 (1965).

Experimental; liquid-vapor; argon; methane; carbon tetrafluoride; Clausius-Mossotti relation; Lorentz-Lorenz function; index of refraction; critical point; critical temperature

2. Abe, A. and P. J. Flory.
Treatment of liquid-liquid phase equilibriums. Hydrocarbon-perfluorocarbon mixtures.
J. Am. Chem. Soc. 88, 2887-93 (1966).

Experimental; hexane-perfluorohexane; n-heptane-perfluro-n-heptane; methylcyclohexane-perfluoromethylcyclohexane; binary liquid mixtures; critical solution temperature, upper; methane-carbon tetrafluoride

3. Abe, R.
Logarithmic singularity of specific heat near the transition point in the Ising model.
Progr. Theor. Phys. (Kyoto) 37, 1070-9 (1967).

Theoretical; statistical mechanics; phase transition; liquid-gas; critical point; logarithmic singularity

4. Abe, Ryuzo.
Singularity of specific heat in the second order phase transition.
Progr. Theor. Phys. (Kyoto) 38, 322-31 (1967).

Theoretical; statistical mechanics; phase transition; logarithmic singularity; canonical partition function; Yang-Lee theory; heat capacity, C_v; critical point

5. Abraham, B. M., D. W. Osborne and B. Weinstock.
The vapor pressure, critical point, heat of vaporization, and entropy of liquid He^3.
Phys. Rev. 80, 366-71 (1950).

Experimental; helium^3; vapor pressure; heat of vaporization; entropy; critical point

6. Ackerman, F. J. and O. Redlich.
On the thermodynamics of solutions. IX. Critical properties of mixtures and the equation of Benedict, Webb and Rubin.
J. Chem. Phys. 38, 2740-2 (1963).

Analytical; critical constants; gaseous mixtures; ethane-nitrogen; methane-ethane; methane-heptane; propane-benzene; ethane-propane; methane-decane; carbon dioxide-sulfur dioxide; equation of state

7. Ackerman, F. J.
Efficiency of equations of state for gaseous mixtures at the critical locus. I. Application of the equation of Benedict, Webb and Rubin. II. Further improvements of an equation of state.
Univ. California, Berkeley, Radiation Lab. Report No. UCRL-1065C Feb. (1963) 66 pp.

Analytical; equation of state; critical region

8. Akerloff, G. C. and H. I. Oshry
The dielectric constant of water at high temperatures and in equilibrium with its vapor.
J. Am. Chem. Soc. 72, 2844-7 (1950).

Experimental; liquid-vapor; water; dielectric constant; critical point

9. Akhadov, Ia. Iu. and M. I. Shakhparonov.
Dielectric properties of solutions in a super high frequency field and concentration fluctuations. [Russian].
Kriticheskie Yavleniya i Flyuktuatsii v Rastvorakh, Mosk. Gos. Univ., Tr. Soveshch., Moscow, 1960, pp. 14-20.

Experimental; binary liquid mixtures; acetone-benzene; dielectric properties; concentration flucuations; Onsager theory

10. Alpert, S. S., Y. Yeh and E. Lipworth.
Observation of time-dependent concentration fluctuations in a binary mixture near the critical temperature using a He-Ne laser.
Phys. Rev. Letters 14, 486-8 (1965).

Experimental; binary liquid mixtures; cyclohexane-aniline; concentration fluctuations; light scattering; critical temperature; Landau-Placzek theory; lasers

11. Alpert, S. S., D. Balzarini, R. Novick, L. Seigel and Y. Yeh.
Observations of time-dependent density fluctuations in carbon dioxide near the critical point using an He-Ne laser.
Physics of Quantum Electronics, San Juan, Puerto Rico, June 1965. New York, McGraw-Hill, 1966, pp. 253-9.

Experimental; liquid-vapor; carbon dioxide; density fluctuations; light scattering; critical point; critical temperature; lasers

12. Alpert, S. S.
Time-dependent concentration fluctuations near the critical temperature.
Critical Phenomena. Proc. Conf., Washington, D. C., April 1965. Natl. Bur. Std. Misc. Publ. 273, 157-60 (1966).

Experimental; binary liquid mixtures; aniline-cyclohexane; critical temperature; concentration fluctuations; light scattering; lasers

13. Altenburg, Kurt.
A graphic method for determining the critical temperature from the temperature dependency of other physical properties, especially the density. [German].
Chem. Tech. (Berlin) 7, 383-7 (1955).

Analytical; critical temperature; liquid-vapor; corresponding states

14. Ambrose, D., J. D. Cox and R. Townsend.
The critical temperatures of forty organic compounds.
Trans. Faraday Soc. 56, 1452-9 (1960).

Experimental; critical temperature; n-pentane; 2-methylbutane; n-hexane; 2-methylpentane; 2,2-dimethylbutane; 2,3-dimethylbutane; n-heptane; 2-methylhexane; n-octane; 2-methylheptane; 2,2,4-trimethylpentane; n-nonane; n-decane; cis-butene-2 trans-butene-2; pentene-1; hexene-1; methylcyclopentane; methylcyclohexene; benzene; toluene; ethylbenzene; n-propylbenzene; 1,2,3-trimethylbenzene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; isobutylbenzene; fluorobenzene; naphthalene; 2,5-lutidine; 3,5-lutidine; n-undecane; n-dodecane; heptene-1; octene-1; cyclohexene; n-butylbenzene; 1-methylnaphthalene; 2,3-lutidine, 3,4-lutidine

15. Amirkhanov, Kh. I. and I. G. Gurvich.
Heat capacity of water-phenol solutions in the critical region. [Russian].
Dokl. Akad. Nauk. SSSR 91, 221-3 (1953).
Translation: U. S. Atomic Energy Comm. NSF-tr-97 Oct. 1953.

Experimental; binary liquid mixtures; water-phenol; intensive mixing; coexistence curve; heat capacity, C_p; critical concentration; critical region

16. Amirkhanov, Kh. I., I. G. Gurvich and E. M. Matizen.
Heat capacity in the critical region of the phenol-water system. [Russian].
Dokl. Akad. Nauk. SSSR 100, 735-6 (1955).

Experimental; binary liquid mixtures; water-phenol; heat capacity, C_p; intensive mixing; critical region; critical concentration

17. Amirkhanov, Kh. I., I. G. Gurvich and E. M. Matizen.
Regarding V. P. Skripov and V. K. Semenchenko article:
Phase transitions of the second kind and critical phenomena. V. Maximum specific heat on the critical layer formation of two-component liquid systems. [Russian].
Zh. Fiz. Khim. 30, 1158-61 (1956).

Analytical; binary liquid mixtures; critical phenomena; phase transition; heat capacity

18. Amirkhanov, Kh. I. and A. M. Kerimov.
Specific heat C_v of 96% ethyl alcohol in the critical range. [Russian].
Dokl. Akad. Nauk. SSSR 110, 578-80 (1956).

Experimental; liquid-vapor; ethanol; critical point; heat capacity, C_v; van der Waals equation of state

19. Amirkhanov, Kh. I. and A. M. Kerimov.
Heat capacity C_v of water and water vapor near the boundary curve including the critical region. [Russian].
Teploenerg. No. 9, 68-72 (1957).

Experimental-liquid-vapor; water; heat capacity, C_v; coexistence curve; critical region

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An investigation of the heat capacity, C_v of water and water vapor in the critical region. [Russian].
Dokl. Akad. Nauk. SSSR 113, 368-71 (1957).
Proc. Acad. Sci. USSR, Phys. Chem. Sect. (English Translation) 112, 177-80 (1957).

Experimental; liquid-vapor; water; heat capacity, C_v; critical point; critical isotherm; critical isochore; coexistence curve; van der Waals equation of state

21. Amirkhanov, Kh. I. and A. M. Kerimov.
The heat capacity C_v of 96% ethanol in the critical region. [Russian].
Zh. Fiz. Khim. 32, 1967-702 (1958).

Experimental; ethanol; liquid-vapor; heat capacity, C_v; van der Waals equation of state; critical region

22. Amirkhanov, Kh. I., A. M. Kerimov and B. G. Alibekov.
Thermophysical affinities of substances at the critical temperature. Heat capacity C_v in the critical region. [Russian].
Kriticheskie Yavleniya i Flyuktuatsii v Rastvorakh, Mosk. Gos. Univ., Tr. Soveshch., Moscow, 1960, pp. 5-13.

Experimental; liquid-vapor; carbon dioxide; heptane; heat capacity, C_v; coexistence curve; critical region

23. Amirkhanov, Kh. I. and A. M. Kerimov.
The heat capacity C_v of water and water vapor in phase transitions, and hypercritical parameters. [Russian].
Dokl. Akad. Nauk. SSSR 142, 1101-4 (1962).
Proc. Acad. Sci. USSR 142, 149-52 (1962).

Experimental; liquid-vapor; water; heat capacity, C_v; coexistence curve; critical region

24. Amirkhanov, Kh. I. and A. M. Kerimov.
Heat capacity C_v of water and water vapor by the straight-line method along the saturation curve including the critical point. [Russian].
Teplonenerg. No. 8, 64-9 (1963).
Translation: SLA TT 64-19978.

Experimental; liquid-vapor; water; heat capacity, C_v; coexistence curve; critical point

25. Amirkhanov, Kh. I. and A. M. Kerimov.
Experimental investigation of the heat capacity C_v of water and water vapor at supercritical parameters of state. [Russian].
Teploenerg. No. 9, 61-5 (1963).

Experimental; liquid-vapor; water; heat capacity, C_v; critical isobar; critical point

26. Amirkhanov, Kh. I. and A. M. Kerimov.
The heat capacity of water at constant volume of the liquid and vapor phase in the single and two-phase regions on each side of the critical point. [Russian].
Dokl. Akad. Nauk SSSR 151, 1064-7 (1963).
Sov. Phys. - Dokl. 8, 797-9 (1964).

Experimental; liquid-vapor; water; heat capacity, C_v; coexistence curve; gravity effect; critical isotherm; critical point

27. Amirkhanov, Kh. I. and A. M. Kerimov.
Specific heat C_v of water and water vapor at super-critical [values of the thermodynamic] parameters of state. [Russian].
Dokl. Akad. Nauk SSSR 159, 581-4 (1963).
Sov. Phys. - Dokl. 8, 1115-18 (1967).

Experimental; liquid-vapor; water; heat capacity, C_v; critical region

28. Amirkhanov, Kh. I., G. V. Stepanov and B. A. Mursalov.
Heat capacity C_v of heavy water near the critical point. [Russian].
Dokl. Akad. Nauk SSSR 163, 1189-90 (1965).
Dokl. Phys. Chem. Proc. Acad. Sci. USSR 163, 595-6 (1965).

Experimental; liquid-vapor; deuterium; heat capacity; C_v; critical point

29. Anantaraman, A. V., A. B. Walters, P. D. Edmonds and C. J. Pings.
Absorption of sound near the critical point of the nitrobenzene-iso-octane system.
J. Chem. Phys. 44, 2651-8 (1966).

Experimental: binary liquid mixtures; nitrobenzene-iso-octane; critical solution temperature; sound absorption; long-range correlation function; sound velocity

30. Andon, R. J. L. and J. D. Cox.
Phase relationships in the pyridine series. Part I. The miscibility of some pyridine homologues with water.
J. Chem. Soc. (1952) pp. 4601-6.

Experimental; β-picoline-water; γ-picoline-water; critical opalescence; 2:4-lutidine-water; 2:5-lutidine-water; 2:6-lutidine-water; critical solution temperature, upper, lower ; impurities; water-β-picoline-2:6-lutidine; coexistence curve

31. Andon, R. J. L., J. D. Cox and E. F. G. Herington.
Phase relationships in the pyridine series. Part V. The thermodynamic properties of dilute solutions of pyridine bases in water at 25° and 40°.
J. Chem. Soc. (1954) pp. 3188-96.

Experimental; critical solution temperature, lower; activity coefficient

32. Anisimov, M. A. and M. I. Shakhparonov.
Light scattering at the critical point for the formation of two layers in a binary liquid system. [Russian].
Zh. Fiz. Khim. 40, 2330-2 (1966).
Russ. J. Phys Chem. 40, 1254-6 (1966).

Experimental; binary liquid mixtures; n-pentyl alcohol- nitromethane; light scattering; Krishnan effect; Debye theory; critical point; coexistence curve

33. Antonoff, George.
On experimental difficulties in obtaining the pressure-volume isothermals in critical regions.
Pakistan J. Sci. Research 7, 124-6 (1955).

Analytical; binary liquid mixtures; compressibility; aniline-amylene; critical solution temperature

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Definition of the critical region and critical temperature. [Russian].
Zh. Fiz. Khim. 36, 2564-6 (1962).
Russ. J. Phys. Chem. 36, 1399-1401 (1962).

Analytical; critical temperature; critical region; critical opalescence; light scattering; hypocritical isotherm; hypercritical isotherms; critical point; binary liquid mixtures; carbon dioxide

35. Arkhangel'skii, K. V.
Fluctuations and thermodynamic stability of systems in the critical and post-critical regions [Russian].
Mekhanizm i Kinetika Kristallizatsii, Nauchn. Sov. Akad. Nauk Belorussk. SSR po Fiz. Tverd. Tela, 1964, pp. 27-34.

Experimental; binary liquid mixtures; nitrobenzene-heptane; nitrobenzene hexane; nitrobenzene-octane; concentration fluctuations; thermodynamic stability; dielectric parameter; dielectric dispersion; critical region

36. Arkhangel'skii, K. V. and V. K. Semenchenko.
Methods and results of measurements of the dielectric parameters of binary liquid mixtures near the critical solution temperature. [Russian].
Zh. Fiz. Khim. 41, 1303-9 (1967).
Russ. J. Phys. Chem. 41, (1967).

Experimental; binary liquid mixtures;benzene-hexane; critical solution temperature; critical concentration; dielectric constant

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Gas-gas equilibria.
J. Chem. Phys. 44, 2322-30 (1966).

Experimental; gas-gas; helium-xenon; critical phenomena; phase transition; coexistence curve

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Vapor-liquid equilibria in the hydrogen-n-butane system at temperatures from 75 to 200° F. and pressures from 300 to 8,000 pounds per square inch.
Dissertation. Univ. Michigan (1950).

Experimental; hydrogen-n-butane; liquid-vapor; critical point

39. Atack, D. and W. G. Schneider.
Solubility measurements in the critical temperature region.
J. Phys. Colloid Chem. 54, 1323-36 (1950).

Experimental; review; liquid-vapor; ethane; binary mixtures; 1-chloro-4iodobenzene-ethane; radioactive tracers (iodine); clusters; intensive mixing; "flat top" coexistence curve; gravity effect; rate of equilibration; critical density; critical opalescence; REVIEW

40. Atack, D. and W. G. Schneider.
The coexistence curve of sulfur hexafluoride in the critical region.
J. Phys. Colloid Chem. 55, 532-9 (1951).

Experimental; van der Waals theory; "flat top" coexistence curve; Mayer theory; liquid-vapor; critical region; sulfur hexafluoride; gravity effect; clusters

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The interfacial tension and other properties of the cyclohexane and aniline system near the critical solution temperature.
Discussions Faraday Soc. No. 15, 210-18 (1953).

Experimental; binary liquid mixtures; cyclohexane-aniline; surface tension; "flat top" coexistence curve; critical solution temperature; impurities (water)

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42. Atack, D. and O. K. Rice.
Critical phenomena in the cyclohexane-aniline system.
J. Chem. Phys. 22, 382-5 (1954).

Experimental; binary liquid mixtures; cyclohexane-aniline; "flat top" coexistence curve; critical concentration; critical opalescence; critical region

43. Azbel', M. Ia., A. V. Voronel' and M. Sh. Giterman.
Contribution to the theory of the critical point. [Russian].
Zh. Eksp. i Teor. Fiz. 46, 673-6 (1964).
Sov. Phys. - JETP 19, 457-9 (1964).

Theoretical; liquid-vapor; argon; oxygen; logarithmic singularity; heat capacity, C_v free energy; critical point

-B-

44. Babb, A. L. and H. G. Drickamer.
Light scattering in the critical region. II. Ethane.
J. Chem. Phys. 18, 655-6 (1950).

Experimental; liquid-vapor; ethane; light scattering; critical point; interaction range

45. Babb, A. L.
Light scattering near the critical solution temperature.
Dissertation. Univ. Illinois. (1951).

Experimental; binary liquid mixtures; methanol-isopentane; methanol-n-pentane; methanol-n-hexane; critical solution temperature; light scattering; Einstein-Smoluchowski theory; Ornstein-Zernike theory; fugacity isotherm; critical opalescence

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The variation of surface tension near the critical point. Role of the densities of the liquid and of the saturated vapor. [French].
J. Phys. Radium. 12, 825-6 (1951).

Analytical; liquid-vapor; surface tension; critical point; density; krypton; neon; xenon; benzene; mercury; argon

47. Baehr, Hans Dieter.
The thermodynamics of two-phase equilibrium. [German].
Akad. Wiss. Lit. (Mainz) Abhandl. Math. - Nat. Kl. 1952, No. 5
Franz Steiner, Wiesbaden, 1952, 85 pp.

Analytical; REVIEW; thermodynamics; critical phenomena; liquid-vapor; benzene; carbon dioxide; water; helium^3; n-hexane;

48. Baehr, H. D.
A new study of the critical state. [German].
Kältetechnik 4, 197-201 (1952).

Analytical; critical opalescence; isotherms; coexistence curve; REVIEW

49. Baehr, Hans Dieter.
The critical state and its representation by the equation of state. [German].
Akad. Wiss. Lit. (Mainz) Abhandl. Math. - Nat. Kl. 1954, No. 6.
Franz Steiner, Wiesbaden, 1954. 101 pp.

Analytical; critical phenomena; equation of state; REVIEW

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Determination of the critical volume of real gases and liquids and about a general equation of state of saturated vapor. [German].
Z. Elektrochem. 58, 204 (1954).

Analytical; liquid-vapor; Giggs phase rule; equation of state; vapor pressure; critical volume

51. Baehr, H. D.
The effect of the force of gravity on critical phenomena. [German].
Z. Elektrochem. 58, 416-23 (1954).

Analytical; gravity effect; critical phenomenon; liquid-vapor; compressibility; density; critical isotherm; coexistence curve

52. Baehr, H. D.
A rational vapor-pressure equation for high pressures, valid to the critical point. [German].
Chem. - Ingr. - Tech. 25, 717-20 (1954).

Analytical; liquid-vapor; vapor pressure; Planks equation; high pressure; carbon dioxide; xenon; methane; critical point

53. Baehr, Hans Dieter.
Behavior of the specific heat C_v and of the entropy at the critical point of water. [German].
Brennstoff - Waerme-Kraft 15, 514-22 (1963).

Analytical; critical isotherm; critical isobar; heat capacity, C_v; entropy; water

54. Baehr, Hans Dieter.
Behavior of the saturation volumes and the vapor pressures near the critical point of water. [German].
Forsch. Gebiete Ingenieurw. 29, 143-6 (1963).

Analytical; water; saturation volume; vapor pressure; critical isotherm; critical point

55. Baehr, H. D. and H. Thurmer.
An equation of state for water in the critical and above critical region. [German].
Brennstoff - Waerme-Kraft 17, 20-5 (1965).

Analytical; equation of state; liquid-vapor; water; critical region; heat capacity; entropy; enthalpy

56. Baehr, Hans Dieter.
Investigation of thermodynamic qualities of pure liquid substances by measuring their inner energy. [German].
Forschungsh. Ver. Deut. Ingr. 32, 1-7 (1966).

Analytical; critical point; carbon dioxide; liquid-vapor; vapor pressure; equation of state; free energy

57. Bagatskii, M. I., A. V. Voronel' and V. G. Gusak.
Measurement of the specific heat C_v of argon in the immediate vicinity of the critical point. [Russian].
Zh. Eksp. i. Teor. Fiz. 43, 728-9 (1962).
Sov. Phys. -JETP 16, 517-19 (1963).

Experimental; liquid-vapor; argon; heat capacity, C_v; logarithmic singularity; stirring

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Surface tension of fluids at the critical point. [French].
J. Chim. Phys. 56, 185-7 (1959).

Analytical; liquid-vapor; surface tension; Eötvös rule; ether; methyl formate; ethyl acetate; carbon tetrachloride; benzene; monochlorobenzene; critical point

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Shape of the coexistence curve of an analytical fluid in the critical region.
J. Chem. Phys. 45, 3175-7 (1966).

Theoretical; coexistence curve; statistical mechanics; critical region; liquid-vapor

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Thermodynamic properties of a van der Waals fluid, particularly near the critical point.
Phys. Rev. Letters 16, 297-300 (1966).

Theoretical; liquid-vapor; critical point; van der Waals theory; Maxwell equal-area rule; Gibbs free energy; heat capacity, C_v; coexistence curve; rectilinear diameter

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Saturated vapor and liquid densities of pure substances.
Can. J. Chem. Eng. 43, 137-42 (1965).

Analytical ; liquid-vapor; density; critical constants; methane; ethane; propane; chlorine; n-butane; benzene; n-pentane; sulfur dioxide; n-hexane; n-heptane; n-octane; ammonia; water; helium; neon; hydrogen; oxygen; carbon monoxide; carbon dioxide; argon; nitrogen; xenon; krypton

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Theory of upper and lower critical solution temperatures.
Discussions Faraday Soc. No. 15, 188-95 (1953).

Theoretical; binary liquid mixtures; critical solution temperature, lower, upper; nicotine-water; coexistence curve; free energy

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Heat capacities of argon in the two-dimensional critical region.
J. Chem. Phys. 45, 461-5 (1966).

Experimental; critical region; argon; liquid-vapor; heat capacity

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Notes on phase relations of binary mixtures in the region of the critical point.
Am. Inst. Chem. Eng. J. 2, 426-7 (1956).

Analytical; binary mixtures; critical point; retrograde condensation; isotherms; ethane-heptane

65. Bartenev, G. M. and A. A. Remizova.
Phase transitions in the simplest systems and their classification. [Russian].
Termodinam. i Stroenie Rastvorov, Akad. Nauk SSSR, Otd. Khim. Nauk i Khim. Fak., Mosk. Gos. Univ., Tr. Soveshch., Moscow, 1958 pp. 67-71. [Published 1959].

Theoretical; phase transition

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Inelastic scattering of cold neutrons in ethyl ether near the critical point.
Phys. Letters 19, 15-16 (1965).

Experimental; liquid-vapor; ethyl ether; neutron scattering; critical point; critical temperature

67. Bata, L. and N. Kroó.
Inelastic neutron scattering by density fluctuations in CO_2 near the critical point.
Phys. Letters 24, 57-8 (1967).

Experimental; liquid-vapor; carbon dioxide; density fluctuations; critical point; neutron scattering

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Theoretical; phase transition

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Theoretical; statistical mechanics; phase transition ; lattice gas

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Experimental; liquid-vapor; ethane; binary mixtures; methane-propane; critical point; dielectric constant; Einstein-Smoluchowski theory; light scattering; index of refraction

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Experimental; liquid-vapor; binary liquid mixtures; ethane; methane-propane; critical point; index of refraction; light scattering; isothermal compressibility; turbidity; Einstein-Smoluchowski theory; Ornstein-Zernike theory; Lorentz-Lorenz law; coefficient of expansion

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Theoretical; liquid-vapor; water; polytropic theory

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Theoretical; significant structure theory; entropy; vapor pressure; critical point

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chlorotrifluoromethane - n-tetradecane;
chlorotrifluoromethane - toulene;
chlorotrifluoromethane - m-xylene;
chlorotrifluoromethane - o-xylene;
chlorotrifluoromethane - bromoform;
chlorotrifluoromethane - phenylether; critical solution pressure; index of refraction; gravity effect

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Dielectric constant of He^3 in the critical region.
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Experimental; $helium^3$; critical isotherm; corresponding states; dielectric constant; Clausius-Mosotti relation; density

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Theoretical; statistical mechanics; liquid-vapor; critical point; particle distribution function; heat capacity, C_v; long-range correlation function

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Experimental; binary liquid mixtures; methanol-cyclohexane; interaction range; critical solution temperature; concentration fluctuations; critical opalescence; Debye theory; light scattering

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Experimental; binary liquid mixtures; perfluoroheptane-n-heptane; light scattering; Ornstein-Zernike theory; Debye theory; solubility parameter theory; critical opalescence

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Critical opalescence of a binary liquid mixture, n-decane-β, β'-dichlorethyl ether. I. Light scattering.
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Experimental; binary liquid mixtures; n-decane-β-β'-dichloroethylether; light scattering; Debye theory; critical opalescence; index of refraction; critical solution temperature; impurities (water)

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Experimental; binary liquid mixtures; polystyrene-cyclohexane; critical opalescence; small-angle x-ray scattering; light scattering; Debye theory

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Critical opalescence of a binary liquid mixture, n-decane-β,β'-dichloroethyl ether. II. Small-angle x-ray scattering.
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Experimental; binary liquid mixtures; critical opalescence; n-decane-β-β'-dichloroethyl ether; small-angle x-ray scattering; Debye theory

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Critical opalescence of a binary liquid mixture, n-dodecane-β,β'-dichloroethyl ether. III. Very near the critical mixing point.
J. Chem. Phys. 42, 2608-10 (1965).

Experimental; binary liquid mixtures; n-dodecane-β-β'-dichlorethyl ether; Debye theory; critical opalescence; critical solution temperature

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Light scattering of a critical binary liquid mixture: triethylamine-water.
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Experimental; binary liquid mixtures; triethylamine-water; light scattering; Debye theory; coexistence curve; critical opalescence; critical solution temperature, upper, lower

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Experimental; binary liquid mixtures; n-perfluoroheptane-i-octane; "flat top" coexistence curve; light scattering; small-angle x-ray scattering; index of refraction; Debye theory; Ornstein-Zernike theory; critical opalescence

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Critical opalescence of binary liquid mixtures. The Debye molecular interaction range.
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Experimental; binary liquid mixtures; perfluorocyclic oxide; carbon tetrachloride; perfluorocyclic oxide-n-heptane; solubility parameter theory; interaction range; index of refraction; Debye theory; critical opalescence

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Effects of isothermal compressibility and gravity on critical opalescence studies of one-component systems.
J. Chem. Phys. 46, 3267-8 (1967).

Experimental; liquid-vapor; carbon dioxide; critical point; small-angle-x-ray scattering; isothermal compressibility; gravity effect; critical opalescence; density; Debye theory

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Correlation effect in the time-dependent concentration fluctuations of the isobutyric acid-water system near its critical mixing point.
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Experimental; binary liquid mixtures; isobutyric acid-water; critical solution temperature; Landau-Placzek theory; Ornstein-Zernike theory; lasers

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Experimental; binary liquid mixtures; critical solution temperature; interaction range; concentration fluctuations; isobutyric acid-water

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Solubility and phase distribution of substances in the critical state of the solvent. [German].
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Theoretical; binary mixtures; liquid-vapor; solubility; mixing rules; thermodynamics; critical point

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Experimental; krypton; neutron diffraction; liquid-vapor; Lennard-Jones potential; critical temperature; critical pressure

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Theoretical; liquid-vapor; simularity theory; Cailletet-Mathias rule; critical constants

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Theoretical; phase transition

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critical point; boiling point; critical pressure

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scattering

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spherical model

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critical opalescence; lattice gas; critical
solution temperature; diffuse interface

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Theoretical; Brownian motion; critical region

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Analytical; critical point; logarithmic singularity; heat capacity, C_v; equation of state

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Experimental; binary liquid mixtures; nitrobenzol-hexane; nitrobenzol-heptane; hexamethylenamine - water; critical solution temperature upper, lower; concentration fluctuation; β-picoline-water; light scattering

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Theoretical; critical point; liquid-vapor; Ornstein-Zernike theory; hypernetted chain approximation; pair correlation function

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Experimental; binary mixtures; ternary mixtures; ethane-propane-n-butane; critical constants

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[continued]

347. ethane-benzene; propane-benzene; n-pentane-benzene; n-hexane-benzene; n-pentane-toluene; n-hexane-toluene; ethylene-propylene; propylene-acetylene; neopentane-cyclohexane; neopentane-benzene; methane-ethane-propane; methane-ethane-n-butane; methane-ethane-n-pentane; methane-propane-n-butane; methane-propane-n-pentane; methane-ethylene-isobutane; ethane-propane-n-pentane; propane-n-butane-n-pentane; n-butane-n-pentane-n-hexane; ethane-propane-n-butane-n-pentane; propane-n-butane-n-pentane-n-hexane; methane-ethane-propane-n-butane-n-pentance; methane-ethane-propane-n-pentane-n-hexane; ethane-propane-n-butane-n-pentane-n-hexane

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isobars

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Theoretical; phase transition ; Yang-Lee theory

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critical isotherm

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Theoretical; condensation; partition function; cluster integrals

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Theoretical; condensation; Mayer's clusters

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Experimental; binary mixtures; critical constants; retrograde condensation; liquid-vapor; azeotropes

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Theoretical; binary liquid mixtures; miscibility; nicotine-water; 2-butoxyl-ethane-1-of-water; 2-propoxy-propane-1-of-water; glycerol-guaiacol; glycerol-n-toluidine

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Theoretical; binary liquid mixtures; critical phenomena

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Theoretical; binary liquid mixtures; critical solution temperature, lower, upper

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Theoretical; liquid-vapor; critical point; equation of state; isotherms; carbon dioxide; methane; hydrochloric acid

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Analytical; van der Waals equation of state; liquid-vapor; critical point

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Theoretical; binary mixture; liquid-vapor; critical point; hydrostatic effect

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Theoretical; critical point; hydrostatic effect

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Theoretical; critical point; liquid-vapor; sound absorption; heat capacity, C_v, C_p

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Experimental; liquid-vapor; sulfur dioxide; methyl chloride; propylene; propane; n-pentane; n-octane; stirring; critical region; critical opalescence; "flat top" coexistence curve; gravity effect; heat capacity, C_v

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Critical temperature of mixtures formed by benzene and octane with iso-alcohols. [Polish].
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volume

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Analytical; critical temperature

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compressibility; vapor pressure; Gibbs excess
free energy; azeotropes; heat of vaporization;
critical point

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anhydride; n-octane-perfluoro-isoctane; excess
free energy; rectilinear diameter; "flat top"
coexistence curve

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Analytical; second virial coefficient; critical
volume; binary mixtures

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Theoretical; binary liquid mixtures; phenol-water
fugacity; Gibbs-Duhem equation; Henry's coefficient;
critical region

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Theoretical; thermodynamics; coexistence curves; phase
transitions; critical point; heat capacity, C_p

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Experimental; binary liquid mixtures; phenol-water; coexistence curve; intensive mixing; critical point

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Experimental; binary liquid mixtures; phenol-water; critical region; coexistence curve

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Theoretical; critical phenomena; phase transition; Gibbs-Duham equation; coexistence curve; critical point; critical isotherm; heat capacity, C_v

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Analytical; binary liquid mixtures; critical phenomena; heat capacity; critical point

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Experimental; binary liquid mixtures; triethylamine-water; impurities (carbon dioxide); coexistence curve; critical phenomena

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Experimental; binary liquid mixtures; benzene-methanol; liquid-vapor; coexistence curve; critical temperature; azeotropes

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Analytical; gas-gas; critical phenomena

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Experimental; critical point; binary liquid mixtures; concentration fluctuations; coexistence curve; hexamethylamine-water; phenol-water; triethylamine-water

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Experimental; binary liquid mixtures; hexamethyllenimine-water; coexistence curve; critical point; critical solution temperature; rectilinear diameter; intensive mixing; heat capacity, C_p

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Experimental; binary liquid mixtures; ternary liquid mixtures; critical solution temperature (lower); triethylamine-water

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Experimental; binary liquid mixtures; hexamethyleneimine-water; intensive mixing; critical solution temperature

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Partial pressures of the components in the critical region of ternary solutions. [Russian].
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Theoretical; "gas-gas" equilibrium; phase equilibria; binary liquid mixtures; van der Waals equation of state

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Experimental; ternary liquid mixtures; acetic acid-water-butane; Gibb's phase rule; critical opalescence; coexistence curve

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Experimental; ternary liquid mixtures; acetic acid-water-butane; critical point; liquid-liquid; liquid-vapor; coexistence curve

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Theoretical; thermodynamics; critical point; critical region; Gibbs equation; Helmholtz free energy; binary mixtures; sulfur hexafluoride-carbon dioxide

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Analytical; liquid-vapor; critical point; critical concentration; nitrogen-carbon dioxide

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Theoretical; critical point; critical temperature; binary liquid mixtures; carbon dioxide-water; acetylene-water; concentration fluctuation

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Theoretical; first-order phase transition; condensation; critical point; free energy; lattice gas; isotherm; Yang-Lee theory of condensation

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Phase equilibria in solutions of liquid sulfur. II. Experimental studies in ten solvents: carbon disulfide, carbon tetrachloride, benzene, toluene, o-zylene, naphthalene, byshenyl triphenylmethane, cis-decaline, and trans-decaline.
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Experimental; binary liquid mixtures; sulfur-carbon disulfide; sulfur-carbon tetrachloride; sulfur-benzene; sulfur-toluene; sulfur-o-xylene; sulfur-naphthalene; sulfur-biphenyl; sulfur-triphenylmethane; sulfur-cis-decaline; sulfur-trans-decaline; polymers; critical solution temperature, upper, lower; theory of regular solutions; critical region

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On the behavior of the compressibility along the critical isotherm.
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Theoretical; heat capacity; carbon dioxide; sound velocity; critical point; Joule-Thomson coefficient

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Theoretical; grand partition function; phase transition; equation of state; Ising model; lattice gas; Mayers expansion

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Phys. Rev. 148, 92-3 (1966).

Theoretical; van der Waals theory; condensation; liquid-vapor; van der Waals equation of state; Maxwell equal-area rule

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Theoretical; binary liquid mixtures; theory of regular solutions; solubility; ternary liquid mixtures; critical solution temperature

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Analytical; equilibrium ratio; convergence pressure; critical pressure; critical point

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Theoretical; equation of state; critical point; sound propagation; heat capacity, C_v; ethanol; n-hexane

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Analytical; critical tension; mercury; nitroglycerin; 2:4:6-trinitrotoluene (TNT); critical density

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Another relation between thermodynamic functions near the critical point of a simple fluid.
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Quantum-mechanical extension of the Lebowitz-Penrose theorem on the van der Waals theory.
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Theoretical; critical constants; dimethyl oxylate

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Analytical; Benedict-Webb-Rubin equation of state; thermodynamic properties; critical region

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Analytical; equation of state; polarization; critical constants

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Experimental; concentration fluctuations; dielectric constants; density; refractive index; nitrobenzene-cyclohexane solutions; nitrobenzene-n-hexane; nitrobenzene-n-heptane; nitrobenzene-n-octane; critical point

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Theoretical; theory of conformal solutions; statistical thermodynamics; critical point; intermolecular forces; Helmholtz free energy; Pitzer's equation; thermodynamic properties; equation of state; entropy; free energy; binary mixtures

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Studies of critical phenomena in carbon dioxide contained in vertical tubes.
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Experimental; carbon dioxide; isotherms; coexistence curve; density fluctuations; critical temperature; critical point; equation of state

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Analytical; REVIEW; critical constants; group contributions; organic compounds

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Experimental; liquid-vapor; sulfur hexafluoride; stirring; gravity effect; coexistence curve; critical point

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Experimental; liquid-vapor; sulfur hexafluoride; critical point

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Determination of the heat capacity of butyl acetate at the critical point. [Russian].
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Experimental; butyl acetate; heat capacity; sound velocity; critical point; critical temperature

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Analytical; REVIEW; equation of state; critical point

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Analytical; REVIEW; Beattie-Bridgeman equation of state; Benedict-Webb-Rubin equation of state

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Analytical; REVIEW; equation of state; critical constants; critical isotherm

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Analytical; equation of state; critical density

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Experimental; liquid-vapor; freon; heat capacity; equation of state; critical constants

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Analytical; liquid-vapor; carbon dioxide; equation of state; critical region

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Correlation of latent heats of vaporization.
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Analytical; vapor pressure; critical point; heat of vaporization

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Experimental; binary liquid mixtures; triethylamine-water; critical solution temperature, lower

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Theoretical; critical phenomena

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Behavior in the critical region. [French].
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Theoretical; REVIEW; van der Waals theory; light scattering; perfluoromethylcyclohexane-carbon tetrachloride; binary liquid mixtures; aniline-cyclohexane; "flat top" coexistence curve; "derby hat" coexistence curve

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Experimental; binary liquid mixtures; cyclohexane-aniline; impurities; "flat top" coexistence curve; critical phenomena

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Theory of classical fluids and the convolution approximation.
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Analytical; liquid-vapor; critical region; binary mixtures; ethane; butane; heptane

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Analytical; critical constants; vapor-liquid; propane-isopentane; methane-ethane; ethane-cyclohexane; methane-propane; propane-benzene; nitrogen-oxygen; carbon dioxide-n-butane; liquid-vapor; binary mixtures

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Vapor-liquid equilibrium constants for ethane-n-butane-n-pentane and ethane-n-butane-n-heptane systems.
Dissertation. Northwestern Univ. (1963).

Experimental; binary mixtures; ternary mixtures; ethane-n butane; ethane-n-heptane; ethane-n-butane-n-pentane; ethane-n-butane-n-heptane; critical constants; vapor pressure

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Critical temperatures and critical pressures for the ethane-n-butane-n-pentane system.
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Experimental; ternary mixtures; ethane-n-butane-n-pentane; critical constants; critical isobar ; liquid-vapor

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Vapor-liquid equilibrium in the ethane-n-heptane system.
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Experimental; binary mixtures; ethane-n-heptane; critical constants; critical point; intensive mixing; liquid-vapor

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Vapor-liquid equilibrium in the ethane-n-butane system.
J. Chem. Eng. Data 10, 307-9 (1965).

Experimental; binary mixtures; ethane-n-butane; critical point; critical pressure; intensive mixing; liquid-vapor

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Note on the behaviour of a vapour-liquid system above and below the critical point.
Proc. Phys. Soc. (London) 76, 303-6 (1960).

Theoretical; van der Waals equation of state; phase transition ; heat capacity, C_p; critical point; Maxwell equal-area rule; Gibbs function

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P-V-T relations of gases.
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Analytical; compressibility; gases; critical point; critical constants

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Direct observation of cluster formation at the critical point of carbon dioxide. [German].
Z. Physik 130, 196-201 (1951).

Experimental; liquid-vapor; carbon dioxide; light scattering; critical opalescence; clusters

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The theory of correlation of density fluctuations in real gases. [German].
Z. Phys. 130, 202-13 (1951).

Theoretical; liquid-vapor; density fluctuations; Ornstein-Zernike theory

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Equilibrium diagrams of ternary liquid systems containing three binary phase separations with upper consolute temperatures. VI. Equilibrium between liquid phases in the glycerol-n-pentanol-nitromethane system. [Russian].
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Experimental; ternary liquid mixtures; glycerol-n-nitromethane; critical solution temperature, upper

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Theoretical; critical fluctuations; random phase approximation; condensation; interaction range; liquid-vapor; equation of state; critical temperature; density correlation function; compressibility; Ornstein-Zernike theory

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Theoretical; density correlation function; random phase approximation; Ornstein-Zernike theory; interaction range; critical temperature; van der Waals equation of state; liquid vapor

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Properties of heterogeneous regions in ternary systems near the critical points. [Russian].
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Theoretical; ternary liquid mixtures; critical point

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The "correspondence curves" of the heterogeneous liquid region of ternary systems. [Russian].
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Russ. J. Phys. Chem. 37, 787-9 (1963).

Analytical; ternary liquid systems; water-acetone-glycerol; o-toluidine-hexane-octane; water-aniline-pyridine; critical region; water ethanol-carbon tetrachloride; water-acetone-carbon tetrachloride; water-ethanol-toluene; water-acetic anhydride-octane; coexistence curve ; index of refraction; water-ethanol-hexane; water-benzene-piperidine; water-toluene-pyperidine

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Criterion of equilibrium between liquid phases in ternary systems. [Russian].
Zh. Fiz. Khim. 37, 1841-5 (1963).
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Experimental; ternary liquid mixtures; coexistence curve ; index of refraction; chloral hydrate-water-diethylamine

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Properties of the separation fields of ternary liquid systems containing a predominant binary systems. [Russian].
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Experimental; ternary liquid mixtures; water-phenol pyridine; coexistence curve; critical solution temperature, upper,lower

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Critical temperatures and pressures of hydrocarbons.
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Analytical; parachor; critical constants

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Vapour pressure of liquid xenon.
Physica 16, 253-6 (1950).

Experimental; xenon; vapor pressure; critical pressure

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The specific heat at constant volume of carbon dioxide in the neighbourhood of the critical point.
Physica 16, 813-14 (1950).

Experimental; liquid-vapor; carbon dioxide;
heat capacity, C_v; critical point

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Specific heat at constant volume near the critical point. [French].
Changements de Phases, Comptes Rendus de la deuxième Réunion Annuelle tenue en commun avec la Commission de Thermodynamque de l'Union Internationale de Physique, Paris, June 2-7, 1952. Paris, Presses Universitaires de France, 1952, pp. 87-90.

Experimental; liquid-vapor; carbon dioxide;
heat capacity, C_v, critical point

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The vapour pressure of liquid krypton.
Physica 18, 63-6 (1952).

Experimental; krypton; vapor pressure;
critical point; triple point

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The specific heat at constant volume of compressed carbon dioxide.
Physica 18, 613-28 (1952).

Experimental; liquid-vapor; carbon dioxide;
heat capacity, C_v; critical region

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Condensed systems in the neighborhood of the critical point.
Ned. Tijdschr. Natuurk. 19, 231-50 (1953) [Dutch].

Analytical; liquid-vapor; carbon dioxide;
critical point; heat capacity, C_v

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Experimental; liquid-vapor; xenon;
critical region; isotherms

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heat of vaporization; critical point

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Analytical; critical constants; corresponding states; density; vapor pressure; phosphorous trihydride; sulfur dioxide; methane; propylene

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gas; phase transition; compressibility

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curve; ternary mixtures; critical phenomena

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alcohol-phenol-water; coexistence curve;
critical region

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Experimental; binary liquid mixtures; nicotine-water; 4-methylpiperidine-H_2O; 3-methylpiperidine-deuterium oxide; butyl glycol-water; high pressure

795. Schneider, W. G.
The nature of critical phenomena. [French].
Changements de Phases, Comptes Rendus de la deuxième Réunion Annuelle tenue en commun avec la Commission de Thermodynamque de l'Union Internationale de Physique, Paris, June 2-7, 1952. Paris, Presses Universitaires de France, 1952, pp. 69-70.

Experimental; REVIEW: liquid-vapor; binary liquid mixtures; xenon; sulfur hexafluoride; aniline-hexane; critical temperature; critical solution temperature; coexistence curve; van der Waals equation of state; gravity effect; radioactive tracers [xenon]

796. Schneider, W. G. and A. Chynoweth.
Thermodynamics of the critical point.
J. Chem. Phys. 19, 1607 (1951).

Theoretical; thermodynamics; critical point; sound velocity; sound absorption; heat capacity, C_v; liquid-vapor; carbon dioxide; sulfur hexafluoride; xenon; ethylene

797. Schneider, W. G. and H. W. Habgood.
Gravitational effects in PVT measurements in the critical region.
J. Chem. Phys. 21, 2080-2 (1953).

Experimental; gravity effect; xenon; liquid-vapor;
critical point; critical isotherm

798. Schuberth, Horst.
Thermodynamic similarities, differences, and relations between isothermal vapor-liquid phase equilibria. [German].
Wiss. Z. Tech. Hochsh. Chem., Leuna-Merseburg 6(3/4) 440-51 (1964).

Analytical; liquid-vapor; binary liquid;
retrograde condensation; critical phenomena

799. Scott, Robert L.
Second-order transitions and critical phenomena.
J. Chem. Phys. 21, 209-11 (1953).

Theoretical; critical phenomena; liquid-vapor;
binary liquid mixtures; phase transition ;
heat capacity

800. Scott, Robert L.
Some unsolved problems of liquids and solutions.
J. Chem. Educ. 30, 542-9 (1953).

Theoretical; critical phenomena; theory of liquids;
theory of regular solutions; "flat top" coexistence
curve; "derby hat" coexistence curve; van der Waals
theory; clusters; Clausius-Clapyeron equation

801. Scott, Robert L.
Phase equilibria in solutions of liquid sulfur. I. Theory.
J. Phys. Chem. 69, 261-70 (1965).

Analytical; Flory-Huggins equation; polymers;
critical solution temperature, lower ; binary
liquid mixtures; coexistence curve

802. Semenchenko, V. K.
Chemocritical phenomena. [Russian].
Dokl. Akad. Nauk SSSR 74, 335-7 (1950).

Theoretical; critical point vs. critical region;
phase transition

803. Semenchenko, V. K.
Phase transitions of the second kind and critical phenomena. II. Thermodynamics of generalized critical phenomena. [Russian].
Zh. Fiz. Khim. 25, 121-6 (1951).

Theoretical; phase transition; critical phenomena;
critical point; equation of state; heat capacity, C_p

804. Semenchenko, V. K. and V. P. Skripov.
Phase transitions of the second kind and critical phenomena. III. Heat capacity of binary liquid mixtures near the critical solution temperature. [Russian].
Zh. Fiz. Khim. 25, 362-8 (1951).

Experimental; binary liquid mixtures; triethylamine-water; nitrobenzene-hexane; critical solution temperature; heat capacity, C_p

805. Semenchenko, V. K.
Fundamental properties of generalized critical phenomena. [Russian].
Zh. Fiz. Khim. 26, 1337-48 (1952).
Translation: LC or SLA 60-15063

Experimental; REVIEW; critical phenomena

806. Semenchenko, V. K. and V. K. Skripov.
Heat capacity of binary liquid mixtures in the critical region of layering. [Russian]..
Dokl. Akad. Nauk SSSR, 85, 1325-7 (1952).

Experimental; binary liquid mixtures; triethylamine-water; heat capacity, C_p; critical region

807. Semenchenko, V. K.
The physical meaning of the concept of the critical region and critical point and their experimental determination. [Russian].
Dokl. Akad. Nauk 87, 441-3 (1952).
Translation: LC or SLA 60-13011

Theoretical; critical point; critical region; thermodynamics

808. Semenchenko, V. K.
Pseudocritical points and generalized critical transitions. [Russian].
Dokl. Akad. Nauk SSSR 92, 625-7 (1953).
Translation: LC or SLA 60 - 15064.

Theoretical; critical point; phase transition

809. Semenchenko, V. K.
Pseudocritical transitions and phase transitions of the second kind. [Russian].
Dokl. Akad. Nauk SSSR 99, 1045-8 (1954).

Theoretical; phase transitions; van der Waals equation of state; Dieterici equation of state; critical point

810. Semenchenko, V. K.
Critical phenomena and phase transitions of the second kind. [Russian].
Izv. Sektora Fiz-Khim. Analiza, Inst. Obshch. Neorgan. Khim., Akad. Nauk SSSR, 26, 56-61 (1955).

Theoretical; phase transition ; critical phenomena

811. Semenchenko, V. K. and M. P. Skripov.
Second order phase transitions and critical phenomena. VI. The effects of small admixtures to the triethylamine-water system in the critical layer formation region. [Russian].
Zh. Fiz. Khim. 29, 194-7 (1955).

Experimental; binary liquid mixtures; triethylamine-water; impurities (isoamylalcohol, Me_4NI); critical temperature; hysteresis; critical point; heat capacity

812. Semenchenko, V. K. and M. Azimov.
Second-order phase transitions and critical phenomena. VII. Dielectric permeability of the nitrobenzene-hexane system in the critical region. [Russian].
Zh. Fiz. Khim. 30, 1821-9 (1956).

Experimental; nitrobenzene-hexane; phase transition critical phenomena; dielectric permeability; heat capacity

813. Semenchenko, V. K. and M. Azimov.
Dielectric constants of binary systems in the critical region. [Russian].
Zh. Fiz. Khim. 30, 2228-35 (1956).

Experimental; binary liquid mixtures; nitrobenzene-heptane; nitrobenzene-octane; dielectric constants; critical region

814. Semenchenko, V. K.
Critical phenomena and the disperse state. [Russian].
Vses. Konf. Kolloidnoi Khim., Akad. Nauk SSR. Otd. Khim. Nauk, Minsk (1956) pp. 250-7.

Theoretical; critical region; critical point; liquid-vapor; thermodynamics

815. Semenchenko, V. K.
Generalized critical phenomena. [Russian].
Primenenie Ul'traakustiki k Issled. Veshchestva. No. 3, 51-69 (1956).

Theoretical; critical phenomena; phase transition ; thermodynamics; Clausius-Clapeyron equation

816. Semenchenko, V. K.
Phase transitions and critical effect in anisotropic phases. [Russian].
Kristallografiya 2, 145-52 (1957).

Theoretical; phase transition; critical phenomena

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Phase transitions of the second order and the critical phenomena. VIII. Heat capacities of liquid mixtures in the critical separation range. [Russian].
Zh. Fiz. Khim. 32, 121-9 (1958).

Experimental; binary liquid mixtures; ternary liquid mixtures; heat capacity; critical concentration; ethanol-water-sodium nitrate

818. Semenchenko, V. K. and K. V. Arkhangelskii.
Dielectric permeability and dielectric losses for binary systems in the critical region. [Russian].
Zh. Fiz. Khim. 33, 230-2 (1959).

Experimental; binary liquid mixtures; nitrobenzene-heptane; dielectric loss; critical region; dielectric permeability

819. Semenchenko, V. K. and E. L. Zorina.
The effect of nonylalcohol on critical phenomena in the triethylamine-water system. [Russian].
Zh. Fiz. Khim. 33, 1176-83 (1959).

Experimental; binary liquid mixtures; triethylamine-water; impurities, nonyl-alcohol; viscosity

820. Semenchenko, V. K. and K. V. Arkhangel'skii.
Dielectric parameters of binary liquid systems in the critical and adjacent regions. [Russian].
Stroenie i Fiz. Svoistva Veshchestva v Zhidkom Sostoyanii, Min. Vysshego i Srednego Spets. Obrazov. Ukr. SSR. Kievsk. Gos. Univ. Materialy-4 go Soveshch., Kiev (1959) pp. 135-8. [Publ. 1962].

Experimental; binary liquid mixtures; heptane-nitrobenzene; critical region; dielectric constants; dielectric loss

821. Semenchenko, V. K.
Physical nature of phase transitions of the second order. [Russian].
Zh. Fiz. Khim. 34, 1649-50 (1960).
Russ. J. Phys. Chem. 34, 787-8 (1960).

Theoretical; phase transition ; critical phenomena

822. Semenchenko, V. K. and K. V. Arkhangel'skii.
Dielectric constant and losses in critical binary liquid systems. [Russian].
Zh. Fiz. Khim. 35, 927-31 (1961).
Russ. J. Phys. Chem. 35, 454-7 (1961).

Experimental; binary liquid mixtures; nitrobenzene-heptane; dielectric constants; impurities

823. Semenchenko, V. K.
Thermodynamics of critical and hyper-critical phenomena in solutions. [Russian].
Zh. Fiz. Khim. 35, 2448-57 (1961).
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Theoretical; binary liquid mixtures;
phase transition

824. Semenchenko, V. K. and S. Akhrarov.
Dielectric constant of binary systems in the critical region. [Russian].
Vopr. Sovrem. Fiz. i Mat., Akad. Nauk Uz. SSR (1962) pp. 9-14.

Experimental; binary liquid mixtures;
nitrobenzene-cyclohexane; nitrobenzene-nonane;
dielectric constant; phase transition

825. Semenchenko, V. K.
Thermodynamic stability theory. [Russian].
Zh. Fiz. Khim. 38, 2311-16 (1964).
Russ. J. Phys. Chem. 38, 1253-5 (1964).

Theoretical; thermodynamic stability;
phase transition

826. Semenchenko, V. K. and V. B. Baskakova.
Trans-critical region of water. [Russian].
Zh. Fiz. Khim. 39, 3105-7 (1965).
Russ. J. Phys. Chem. 39, 1662-3 (1965).

Analytical; thermodynamic stability; liquid-vapor;
critical point; trans-critical region

827. Semenchenko, V. K. and E. D. Soldatova.
Thermodynamics of below-critical phenomena in condensed systems. [Russian].
Zh. Fiz. Khim. 40, 1082-5 (1966).
Russ. J. Phys. Chem. 40, 581-4 (1966).

Analytical; liquid-vapor; phase transition; water

828. Shakhparonov, M. I.
Fluctuations in solutions. [Russian].
Kriticheskie Yavleniya i Flyuktuatsii v Rastvorakh, Mosk. Gos. Univ., Tr. Soveshch.,
Moscow, 1960, pp. 151-60.

Theoretical; binary liquid mixtures; acetone-benzene;
nitrobenzene-octane; concentration fluctuations

829. Shakhparonov, M. I.
The dependence of the dielectric constant on temperature in the critical region.
[Russian].
Vestn. Mosk. Univ. Ser. Khim. 16, No. 4, 25-30 (1961)

Theoretical; thermodynamics; critical region;
dielectric constants; binary liquid mixtures;
nitrobenzene-n-heptane; nitrobenzene-n-octane;
concentration fluctuations

830. Sherman, Robert H.
Behavior of He^3 in the critical region.
Phys. Rev. Letters *15*, 141-2 (1965).

Experimental; liquid-vapor; critical region; compressibility; coexistence curve; critical isotherm; critical isochore; helium^3

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The coexistence curve of He^3.
Critical Phenomena. Proc. Conf., Washington, D. C., April 1965. Natl. Bur. Std. Misc. Publ. *273*, 7-8 (1966).

Experimental; He^3 liquid-vapor; critical region; coexistence curve; critical temperature; critical pressure; critical point

832. Sherman, R. H. and E. F. Hammel.
Application of the quantum theory of corresponding states to the problem of critical-point exponents.
Phys. Rev. Letters *15*, 9-11 (1965).

Theoretical; critical point; quantum theory; critical region; DeBoer's theory of corresponding states; gravity effect; helium^3; hydrogen; xenon

833. Sheveleva, A. D.
The equilibrium of the liquid phases in the system water-isoöctane-aniline. [Russian].
Izv. Vysshikh. Ucheb. Zavedenii, Khim. i Khim. Tekhnol. *2*, 881-5 (1959).

Analytical; ternary liquid mixtures; water-isoöctane-aniline; critical point; critical solution temperature, upper

834. Shimans'ka, O. [ ] T.
Investigation of the critical state of matter by Toepler's method. I. Experimental. [Ukrainian].
Ukr. Fiz. Zh. *3*, 542-51 (1958).

Experimental; liquid-vapor; ethyl ether; density gradients; critical point

835. Shimans'ka, O. [ ] T.
Investigation of the critical state of matter by Toepler's method. III. Dependence of the density of an octane solution in hexane on temperatures near the liquid-vapor critical point. [Ukrainian].
Ukr. Fiz. Khim. *5*, 549-59 (1960).

Experimental; binary liquid mixtures; octane-hexane; compressibility; gravity effect; density gradients; hysteresis

836. Shimanskaia, E. T. and A. Z. Golik.
A study by Toepler's method of the liquid-vapor critical state of solutions. [Russian].
Kriticheskie Yavleniya i Flyuktuatsii v Rastvorakh, *Mosk. Gos. Univ.*, *Tr. Soveshch.*, Moscow, 1960, pp. 161-70.

Experimental; binary liquid mixtures; hexane-octane; gravity effect; density gradients; hysteresis

837. Shimanskaia, E. T., Iu. I. Shimanskii and A. Z. Golik.
Investigation of the critical state of pure substances by Toepler's method. [Russian].
Kriticheskie Yavleniya i Flyuktuatsii v Rastvorakh, *Mosk. Gos. Univ.*, *Tr. Soveshch.*, Moscow, 1960, pp. 171-88.

Experimental; liquid-vapor; heptane; hysteresis; critical point

838. Shimanskaia, E. T. and Iu. I. Shimanskii.
The critical state of pure substances. [Russian].
Kiev, *Izd. Kievsk Univ.* 1961. 40 pp.

Experimental; critical region; liquid-vapor

839. Shimanskii, Iu. I.
Temperature dependence of the saturated vapor pressure curve near the critical point. [Russian].
Visn. Kiivsk Univ. No. 2. *Ser. Fiz. ta Khim* No. 1, 61-4 (1959).

Analytical; critical point; critical temperature; rectilinear diameter; vapor pressure; liquid-vapor benbenzene; hexane; heptane; octane; Clausius-Clapeyron equation

840. Shimanskii, Iu. I. and E. T. Shimanskaia.
Density of benzene near the critical point. [Russian].
Ukr. Fiz. Zh. *7*, 861-8 (1962).

Experimental; liquid-vapor; benzene; critical point; critical opalescence

841. Shimanskii, Iu. I.
Properties of coexistent phases in a lattice gas model. [Ukrainian].
Ukr. Fiz. Zh. *12*, 1172-5 (1967).

Theoretical; lattice gas; critical point; Bragg-Williams approximation; heat capacity, C_v

842. Shimanskii, Iu. I.
On a jump of heat capacity, C_v, when crossing a coexistence curve near the critical point-liquid-vapor. [Ukrainian].
Ukr. Fiz. Zh. *12*, 1356-60 (1967).

Theoretical; liquid-vapor; critical point; heat capacity, C_v; coexistence curve; Bragg-Williams approximation

843. Shimokawa, J.
Condensation theory by cell method and calculation of the critical temperature of various gases. [Japanese].
Busseiron Kenkyu 62, 138-51 (1953).

Theoretical; liquid-vapor; helium; hydrogen; nitrogen; oxygen; methane; free energy; surface tension; critical temperature; partition function

844. Shimose, Ikuro.
Statistical theory of phase transition. I. General theory for lattice gas.
J. Phys. Soc. Japan 9, 451-6 (1954).

Theoretical; phase transition ; lattice gas; molecular clusters; partition function; equation of state; statistical mechanics

845. Shimose, Ikuro.
Statistical theory of phase transitions. II. Numerical calculation for lattice gas.
J. Phys. Soc. Japan 9, 457-9 (1954).

Theoretical; phase transition ; statistical mechanics; lattice gas; vapor density; liquid density; partition function

846. Shimose, Ikuro.
Equation of state for vapor-liquid-solid system.
J. Phys. Soc. Japan 10, 860-4 (1955).

Theoretical; equation of state; order-disorder; vapor-liquid; liquid-solid; lattice gas; free energy; critical point; statistical mechanics

847. Shimose, Ikuro.
Statistical Theory of phase transition. III. Application to vapor-liquid-solid equilibrium.
J. Phys. Soc. Japan 11, 202-5 (1956).

Theoretical; statistical mechanics; phase transition ; molecular clusters; partition function; equation of state; vapor-liquid; liquid-solid

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Lattice theory of the liquid state.
J. Phys. Soc. Japan 11, 615-19 (1956).

Theoretical; theory of liquids; lattice theory; cell model; partition function; statistical mechanics; virial coefficient; critical point; molecular distribution function

849. Shinoda, Kozo and J. H. Hildebrand.
Liquid-liquid solubility of pentaerythritol tetraperfluorobutyrate with chloroform, carbon tetrachloride and octamethylcyclotetrasilotane.
J. Phys. Chem. 62, 481-3 (1958).

Experimental; binary liquid mixtures; coexistence curve; critical constants; entropy

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Critical composition in liquid mixtures of components of very different molar volumes.
J. Phys. Chem. 65, 1885-6 (1961).

Experimental; binary liquid mixtures; pentaerythnol tetraperfluorobutyrate ; critical temperature; entropy of mixing; "Flory-Huggins" mixing

851. Siegert, Arnold J. F.
Metastable states of a finite lattice gas.
Phys. Rev. 97, 1456-62 (1955).

Theoretical; statistical mechanics; lattice gas; critical temperature; range of intermolecular forces; Ising model; fugacity

852. Simons, J. H. and R. D. Dunlap.
The properties of n-pentforane and its mixture with n-pentane.
J. Chem. Phys. 18, 335-46 (1950).

Theoretical; experimental; theory of ideal solutions; theory of regular solutions; n-pentane-n-pentforane; liquid-vapor; critical solution temperature; interaction range; Raoult's law

853. Sirkar, S. C. and Anjali Choudhury.
Nature of grouping of molecules in opalescent binary liquid mixtures.
Nature 167, 198 (1951).

Experimental; binary liquid mixtures; nitrobenzene-hexane; ultrasonic absorption; aniline-cyclohexane; sound absorption; critical opalescence

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Heat capacity and enthalpy of water vapor at pre-critical pressures. [Russian].
Teploenerg. No. 7, 10-13 (1958).
Translation LC/SLA 61-15409

Experimental; water; heat capacity, C_p; enthalpy

855. Sirota, A. M. and P. E. Beliakova.
On the caloric properties of water at pressures up to 500 and temperatures up to 300°C. [Russian].
Teploenerg. No. 10, 67-70 (1959).
Translation: OTS 62-11333

Experimental; water; heat capacity, C_p

856. Sirota, A. M. and B. K. Mal'tsev.
Experimental investigation of the heat capacity of water at temperatures of 10-500°C and pressures up to 500 kg/cm^2. [Russian].
Teploenerg. No. 9, 7-15 (1959).
Translation; OTS/SLA 62-19935

Experimental; water; heat capacity, C_p

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Experimental data on the heat capacity of water vapor at pressures between 300-500 atms. and temperatures between 500-600°C. [Russian].
Teploenerg. No. 10, 67-8 (1960).
Translation: Transatom. Bull. 1, 445 (1961).

Experimental; heat capacity; water; supercritical region

858. Sirota, A. M. and B. K. Mal'tsev.
Heat capacity of water in the critical region. [Russian].
Toploenerg. 9, No. 1, 52-7 (1962).

Experimental; liquid-vapor; water; critical region;
heat capacity, C_p

859. Sirota, A. M. and D. L. Timrot.
Experimental investigation of the heat capacity of water vapor in the pre-critical region. [Russian].
Teploenerg. No. 7, 16-23 (1956).
Translation: OTS/SLA 62-24074

Experimental; liquid-vapor; water; heat capacity, C_p

860. Sivtsev, D. M.
Discovery of the critical temperature. [Russian].
Uch. Zap. Yakutsk. Gos. Univ. Ser. Estestven. Nauk No. 1, 33-47 (1957).

Theoretical; REVIEW; critical temperature

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Liquid-vapor phase behavior in the critical region of the binary systems benzene with n-alcohols.
Dissertation. The Ohio State University. (1961).

Theoretical; Experimental; binary liquid mixtures;
methanol-benzene; n-propanol-benzene; n-butanol-benzene;
ethanol-benzene; azeotropes; conformal solution theory;
critical constants; liquid-vapor; critical point

862. Skazka, V. S., V. N. Tsvetkov, V. E. Eskin.
Asymmetry of the critical opalescence in polymer solutions. [Russian].
Vysokomolekul. Soedin. 2-627-8 (1960).

Experimental; binary liquid mixtures; polybutylmethylacrylate-isopropanol; polystyrene-cyclohexane; Debye's theory;
critical opalescence; angular dissymmetry

863. Skripov, V. P. and V. K. Semenchenko.
Phase transitions of the second kind and critical phenomena. V. Maximum heat capacity in the critical range of layer formation in binary liquid mixtures. [Russian].
Zh. Fiz. Khim. 29, 174-84 (1955).

Experimental; binary liquid mixtures; nitrobenzene-heptane; critical point; heat capacity; triethylamine-water

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Decrease of light intensity by carbon dioxide in the post-critical region. [Russian].
Opt. i Spektroskopiya 1020-1 (1956).

Experimental; liquid-vapor; light scattering; carbon
dioxide; critical region

865. Skripov, V. P.
Energy fluctuations in solutions and their relations to the heat capacity. [Russian].
Thermodinam. i Stroenie Rastvorov, Akad. Nauk SSSR, Otd. Khim. Nauk i Khim. Fak., Mosk. Gos. Univ., Tr. Soveshch. (1958) pp. 43-8 (Publ. 1959).

Theoretical; concentration fluctuations; energy fluctuations; light scattering; critical temperature; binary liquid mixtures; methyl alcohol-benzene

866. Skripov, V. P. and Iu. D. Kolpakov.
Light scattering in carbon dioxide along pre-critical and post-critical isotherms. [Russian].
Kriticheskie Yavleniya i Flyuktuatsii v Rastvorakh, Mosk. Gos. Univ., Tr. Soveshch, Moscow, 1960, pp. 126-36.

Experimental; liquid-vapor; carbon dicxide; first-order phase transition; light scattering; Rayleigh's law

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Investigation of the critical phase transition in carbon dioxide by light scattering. [Russian].
Inzh. - Fiz. Zh. Akad. Nauk Belorussk. SSR 3 (4), 30-6 (1960).

Experimental; liquid-vapor; carbon dioxide; critical point; light scattering; critical isotherm

868. Skripov, V. P. and Iu. D. Kolpakov.
Light scattering in the vicinity of the critical liquid-vapor point. I. Apparatus. Experiments with carbon dioxide and sulfur hexafluoride. [Russian].
Opt. i. Spektroskopiya 19, 392-402 (1965).
Opt. Spectry.(USSR) (English Transl.) 19, 220-5 (1965).

Experimental; liquid-vapor; carbon dioxide; sulfur hexafluoride; light scattering; critical point; Ornstein-Zernike theory; Clausius-Mossctti equation

869. Skripov, V. P. and Iu. D. Kolpakov.
Determination of the correlation distance near the critical point by the scattering of light. [Russian].
Opt. i Spektroskopiya 19, 645-7 (1965).
Opt. Spectry. (USSR) (English Transl.) 19, 360-1 (1965).

Theoretical; liquid-vapor; carbon dioxide; light scattering; Ornstein-Zernike theory; critical point; index of refraction

870. Skripov, V. P.
Shape of the spinnodal curve in the liquid-vapor system and the rectilinear diameter rule. [Russian].
Zh. Fiz. Khim. 39, 348-40 (1965).
Russ. J. Phys. Chem. 39, 225-7 (1965).

Theoretical; van der Waals equation of state; Dieterici equation; rectilinear diameter; critical point

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Important property of the spinodel. [Russian].
Teplofiz. Vysokikh. Temperatur. Akad. Nauk SSSR 4, 816-20 (1966)
High Temp. (USA) 4, 575-60 (1966).

Theoretical; critical point; Planck-Gibbs rule;
coexistence curve; equation of state

872. Slaughter, Hayes.
Thermodynamic theory for the vapor-liquid critical region for water.
Am. Chem. Soc., Div. Water Waste Chem., Preprints 1962 (Sept.), 1-6.

Theoretical; thermodynamics; water; liquid-vapor;
critical region; surface tension

873. Sliwinski, A. S. and A. E. Brown.
Ultrasonic light diffraction patterns in ethylene in the critical region.
Acustica (Intern.) 16, 312-23 (1965-66).

Experimental; liquid-vapor; ethylene;
ultrasonic propagation; light diffraction

874. Smirnov, B. A. and A. A. Predvoditelev.
Measurement of the speed of sound in the binary system CH_3OH - n - C_6H_{14} having a critical temperature of solution. [Russian].
Zh. Fiz. Khim. 28, 906-13 (1954).

Experimental; binary liquid mixtures; rectilinear
diameter; sound velocity; critical solution
temperature; methanol-n-hexane

875. Smirnov, B. A. and A. A. Predvoditelev.
The density and compressibility of the binary mixture methanol-hexane that has a top critical temperature of solution and a comparison with the values of these parameters in the critical region for a liquid-vapor system. [Russian].
Zh. Fiz. Khim. 28, 1581-90 (1954).

Experimental; binary liquid mixtures; liquid-vapor;
critical solution temperature, upper; density;
compressibility; methanol-n-hexane

876. Smirnov, B. A.
Visual observations in the critical region. [Russian].
Kriticheskie Yavleniya i Flyuktuatsii v Rastvorakh, Moskov. Gos. Univ., Tr. Soveshch. Moscow 1960, pp. 137-41.

Experimental; binary liquid mixture; methanol-n-hexane;
fluctuations; critical region

877. Smirnov, B. A.
The transition of partially miscible binary mixtures through the critical region. [Russian].
Zh. Fiz. Khim. 35, 2249-55 (1961).
Russ. J. Phys. Chem. 35, 1109-13 (1961).

Experimental; binary liquid mixtures; critical
solution temperature, upper; stirring; miscibility;
phase transition; critical opalescense; methanol-n-
hexane

878. Smirnov, B. A.
Transition of a partially miscible binary mixture through the critical region. [Russian].
Zh. Fiz. Khim. 35, 2429-36 (1961).
Russ. J. Phys. Chem. 35, 1200-4 (1961).

Theoretical; liquid-vapor; binary liquid mixtures; stirring; critical region; critical temperature; critical opalescence; miscibility

879. Smirnov, B. A.
Some features of the mutual solubility phenomenon observed in the critical mixing regions. [Russian].
Teplo-i Massoperanos 3, 271-8 (1965).

Experimental; binary liquid mixtures; methanol-n-hexane; critical solution temperature, upper

880. Smith, F. G.
Review of physico-chemical data on the state of supercritical fluids.
Economic Geology and the Bull. Soc. Economic Geologists 48, 14-38 (1953).

Theoretical; REVIEW; fluids; molecular clusters; binary mixtures; x-ray scattering; phase transition ; critical phenomena

881. Smith, W. T., Jr., S. Greenbaum and G. P. Rutledge.
Correlation of critical temperatures with thermal expansion coefficients of organic liquids.
J. Phys. Chem. 58, 443-7 (1954).

Analytical; liquid-vapor; equation of state; thermal coefficient of expansion; critical temperature

882. Sobocinski, Donald P.
Phase behavior of the hydrogen sulfide-carbon dioxide system from the critical of hydrogen sulfide to the eutectic temperature at -140°F and of the methane-hydrogen sulfide-carbon dioxide system between -75°F and 148°F.
Dissertation. Univ. Kansas. (1963).

Experimental; binary mixtures; ternary mixtures; hydrogen sulfide-carbon dioxide; methane-hydrogen sulfide-carbon dioxide; critical point

883. De Sobrino, L.
On the kinetic theory of a van der Waals gas.
Can. J. Phys. 45, 363-36 (1967).

Theoretical; van der Waals equation of state; kinetic theory; metastable states

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critical point

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Analytical; critical constants; corresponding states

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corresponding states

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critical point; heat capacity, C_p

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electrostatic field; dielectric constants

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light scattering; electric field; dielectric
properties

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Gibbs free energy; coefficient of expansion;
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temperature; phase transition

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critical temperature; corresponding states;
krypton-helium

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critical point; gravity effect; "flat top"
coexistence curve

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point; liquid-vapor; compressibility; density;
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critical region; impurities, (air)

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Experimental; ternary liquid mixtures; water-benezene-isobutyl alcohol; binary liquid mixtures; water-benzene; critical temperature ; azeotropes

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Application of the corresponding state law to azeotropes. II. Vapour and liquid volumes of binary azeotropes.
Bull. Acad. Polon. Sci. Ser. Sci. Chim. 8, No. 6, 319-23 (1960).

Analytical; equation of state; azeotropes; binary liquid mixtures; propane-hydrogen sulfide; propane-sulfur hexafluoride; ethane-hydrogen sulfide; ethane-carbon dioxide

1061. Zawisza, A. C.
Application of the corresponding states law to azeotropes. III. Influence of the critical parameters of the mixture on the azeotrope formation.
Bull. Acad. Polon. Sci. Ser. Sci. Chim. 8, No. 6, 325-9 (1960).

Theoretical; van der Waals equation of state; binary liquid mixtures; ternary liquid mixtures; azeotropes; corresponding states; critical constants

1062. Zernike, J.
The range of existence of the liquid state.
Rec. Trav. Chim. 69, 116-24 (1950).

Theoretical; liquid state; critical point; triple point; Trouton's rule

1063. Zhil'kov, E. A. and R. L. Stratonovich
Thermodynamics of phase transitions in selected systems. [Russian].
Izv. Vysshikh. Uchebn. Zavedenii, Fiz. No. 6, 15-18 (1963).

Theoretical; statistical mechanics; thermodynamics; critical region; phase transition; liquid-vapor

1064. Zhil'kov, E. A. and R. L. Stratonovich
Statistical theory of the critical point. [Russian].
Izv. Vysshikh. Uchebn. Zavedenii, Fiz. No. 4, 54-60 (1964).

Theoretical; liquid-vapor; critical point; statistical mechanics

1065. Zhivojinov, Jovanka M.
Determination of the critical pressure of monatomic elements. [French].
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Theoretical; critical pressure; liquid-vapor; argon; xenon

-Z-

1066. Zhuravlev, E. F.
Systems with an upper triple critical point. [Russian].
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Experimental; ternary liquid mixtures;
n-phenylenediamine-resorcinol-water;
antipyrine-resorcinol-water;
antipyrine-pyrocatechol-water;
antipyrine-chloralhydrate-water;
pyridine-chloral hydrate-water;
critical solution temperature, upper; critical point

1067. Zhuravlev, E. F.
Systems with a lower ternary critical point. I. Layer formation in the chloral hydrate-water-pyramidon system. [Russian].
Zh. Obshch. Khim. 29, 3178-83 (1959).
J. Gen. Chem. (USSR) 29, 3144-48 (1959).

Experimental; ternary liquid mixtures;
chloral hydrate-water-pyramidon; liquid-liquid;
critical solution temperature, lower;

1068. Zhuravlev, E. F.
Phase diagrams of ternary liquid systems containing two binary stratifications with lower critical temperatures of solution. I. [Russian].
Zh. Obshch. Khim. 30, 7-12 (1960).
J. Gen. Chem. (USSR) 30, 6-10 (1960).

Analytical; ternary liquid mixtures; critical
solution temperature, upper

1069. Zhuravlev, E. F.
Phase diagrams of ternary liquid systems containing two-binary layers with lower critical solubility temperatures. II. Layering-out in systems of triethylamine-pyramidon-water and diantipyrylmethylmethylamine-pyramidon- water. [russian].
Zh. Obshch. Khim. 30, 12-20 (1960).
J. Gen. Chem.(USSR) 30, 11-18(1960).

Analytical; ternary liquid mixtures;
critical solution temperature, lower;
triethylamine-pyramidon-water;
diantipyrylmethylmethylamine, critical point

1070. Zhuravlev, E. F.
Phase diagrams of ternary liquid systems containing two binary layers with different critical points. [Russian].
Izv. Vysshikh Uchebn . Zavedenii, Khim. i Khim. Tekhnol. 3, 997-1001 (1960).

Theoretical; ternary liquid mixtures;
critical point; critical solution temperature

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The diagrams of state of ternary liquid systems containing two binary layers with different critical points. III. Layering in the system pyramidon-water-succinic acid nitrile and pyramidon-water-phenylhydrazine. [Russian].
Zh. Obshch. Khim. 34, 1710-16 (1964).
J. Gen. Chem. (USSR) 34, 1724-9 (1964).

Experimental; ternary liquid mixtures; pyramidon-water-succinic acid nitrile; pyramidon-water-phenylhydrazine; critical solution temperature, lower; critical point; critical opalescence

1072. Zhuravlev, E. F. and I. K. Mel'nikova.
Phase diagrams of ternary liquid systems containing three binary layering solutions with upper critical points. Liquid phase equilibria in the system water-succinic nitrile-n-butyl alcohol. [Russian].
Zh. Obshch. Khim. 34, 1716-22 (1964).
J. Gen. Chem. (USSR) 34, 1730-4 (1964).

Experimental; ternary liquid mixtures; water-succinic nitrile-n-butyl alcohol; critical solution temperature, upper; critical point

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Hetero-polyazeotropic systems. I. System methanol-n-parafluric hydrocarbons.
Bull. Acad. Polon. Classe III. Ser. Sci. Chim. Geol. et Geograph. 4, 153-7 (1956).

Experimental; decane-methanol; undecane-methanol; critical solution temperature; methanol-heptane; methanol-octane; methanol-nonane; azeotropes

1074. Zieborak, K. and K. Olszewski.
Hetero-polyazeotropic systems. II. Acetonitrile-n-parafluric hydrocarbons.
Bull. Acad. Polon. Sci. Classe III. Ser. Sci. Chim. Geol. et Geograph. 4, 823-7 (1956).

Experimental; binary liquid mixtures; acetonitrile-i-heptane; acetonitrile-i-octane; acetonitrile-n-nonane; acetronitrile-i-decane; acetonitrile-i-undecane; critical temperature; azeotropes

1075. Zieborak, K. and K. Olszewski.
Solubility of n-paraffins in acetic acid.
Bull. Acad. Polon. Sci. Ser. Sci. Chim. Geol. et Geograph. 6, No. 2, 115-21 (1958).

Experimental; acetic acid-n-octane; phase rule; acetic acid-n-undecane; acetic acid-n-dodecane; impurities; critical solution temperature

1076. Zieborak, J. and K. Olszewski.
Critical solubility temperatures of the series of binary mixtures of n-paraffins with some solvents.
Bull. Acad. Polon. Sci. Ser. Sci. Chim., Geol. et Geograph. 6, No. 2 122-31 (1958).

Analytical; azeotropes; binary liquid
mixtures; critical solution temperature

1077. Zieborak, K.
On the shape of the boiling temperature izobars [sic] near the critical solubility temperature.
Bull. Acad. Polon. Sci. Ser. Sci. Chim., Geol. et Geograph. 6, No. 7 439-42 (1958).

Analytical; binary liquid mixtures; critical
solution temperature, upper; azeotropes;
boiling temperature isobars

1078. Zieborak, K.
On the boiling temperature isobars of liquid mixtures near the critical solubility temperature in n-hexane-aniline systems.
Bull. Acad. Polon. Sci. Ser. Sci. Chim., Geol. et Geograph. 6 No. 7, 443-7 (1958).

Experimental; binary liquid mixtures;
n-hexane-aniline; ebuliometric measurements;
critical solution temperature; critical
isobar; boiling temperature isobars

1079. Zilberman, E. N.
Physicochemical properties of cyclohexanol-water. I. Mutual solubility of cyclohexanol-water. [Russian].
Zh, Prik. Khim. 24, 776-8 (1951).
J. Appl. Chem. USSR 24, 883-5 (1951).

Experimental; critical temperature;
binary liquid mixtures; solubility

1080. Zilberman, E. N.
Determination of the critical point of a ternary mixture of partially miscible liquids with one vapor. The system water-benzene-hexamethyleminine. [Russian].
Zh. Fiz. Khim. 26, 1458-61 (1952).

Experimental; ternary liquid mixture;
water-benzene-hexamethylenimine;
retrograde condensation; miscibility

1081. Zilberman, T. N. and Z. D. Skorikova.
Systems with completely closed solubility curves. Mutual solubility of hexamethylenimine and water. [Russian].
Zh. Obshch. Khim. 23, 1629-30 (1953).

Experimental; binary liquid mixtures;
hexamethylenimine-water; critical solution temperature,
lower; solubility

1082. Zimm, Bruno H.
Opalescence of a two-component liquid system near the critical mixing point.
J. Phys. Colloid Chem. 54, 1306-17 (1950).

Experimental; binary liquid mixtures; critical
solution temperature; carbon tetrachloride-perfluoromethylcyclohexane; critical opalescence;
isotherms; light scattering; Ornstein-Zernike theory;
impurities; second-order phase transition;
critical point

1083. Zimm, Bruno H.
Contribution to the theory of critical phenomena.
J. Chem. Phys. 19, 1019-23 (1951).

Theoretical; critical point; Mayer theory;
van der Waals theory; clusters; fugacity

1084. Zimm, Bruno H.
The shape of the coexistence curve in the critical region.
J. Chem. Phys. 20, 538 (1952).

Theoretical; binary liquid mixtures;
coexistence curve; critical region

1085. Zimm, Bruno H.
Simplified relation between thermodynamics and molecular distribution functions.
J. Chem. Phys. 21, 934-5 (1953).

Theoretical; pair distribution functions;
cluster integral; binary liquid mixtures;
compressibility; chemical potential;
statistical mechanics; thermodynamics

1086. Zimm, B. H., R. A. Oriani and J. D. Hoffman.
Cooperative aspects of phase transitions.
Ann. Rev. Phys. Chem. 4, 207-32 (1953).

Theoretical; REVIEW; phase transition; liquid-vapor;
critical point; critical phenomena.

1087. Zubarev, D. N.
A Gibbs ensemble locally in equilibrium and its connection with the theory of fluctuation and transfer phenomena. [Russian].
Dokl. Akad. Nauk. SSSR 162, 532-5 (1965).
Dokl. Sov. Phys. Proc. Acad. Sci. USSR 10, 452-4 (1965).

Theoretical; statistical mechanics;
critical point; fluctuations

1088. Zwanzig, Robert W., John G. Kirkwood, Kenneth F. Stripp and Irwin Oppenheim. Radial distribution functions and the equation of state of monatomic fluids. _J. Chem. Phys. 21_, 1268-71 (1953); _Errata_: _J. Chem. Phys. 22,_ 1625 (1954).

Theoretical; radial distribution function; Lennard-Jones potential; equation of state; critical point; critical isotherm; critical constants; liquid-vapor; isothermal compressibility

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ABSTRACTS

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Canadian Journal of Chemistry (1966 - 1967)

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Journal of Chemical Physics (1959 - 1967)

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Journal of Physical Chemistry (1966 - 1967)

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Mathematical Reviews (1951 - April 1968)

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Zeitschrift für physikalische Chemie (1950 - 1965)

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Zhurnal Eksperimental´noi i Teoreticheskoi, SSSR (1955 - 1963, 1966 - 1967)

Zhurnal Fizicheskoi Khimii, SSSR (1959 - 1967)

4. Abbreviations

-A-

Acta Chem. Scand.	Acta Chemica Scandinavica
Acustica (Intern.)	Acustica. International Journal on Acoustics
Advan. Chem. Phys.	Advances in Chemical Physics
Advan. Phys.	Advances in Physics
Akad. Wiss. Lit. (Mainz) Abhandl. Math. - Nat. Kl.	Akademie der Wissenschaften und der Literatur (Mainz), Abhandlungen der Mathematisch--Naturwissenshaftlichen Klasse
Allgem. Wärmetech.	Allgemeine Wärmetechnik
Am. Inst. Chem. Engrs. J.	American Institute of Chemical Engineers Journal
Am. J. Phys.	American Journal of Physics
Am. J. Sci.	American Journal of Science
Anal. Chem.	Analytical Chemistry
Anales Real Soc. Españ. Fis. Quím. (Madrid)	Anales de la Real Sociedad Española de Fisica y Química (Madrid)
Ann. Acad. Sci. Fennicae	Annales Academiae Scientiarum Fennicae
Ann. Phys. (N. Y.)	Annals of Physics (New York)
Ann. Rev. Phys. Chem.	Annual Review of Physical Chemistry
Appl. Sci. Res. Sec. A	Applied Scientific Research, Section A; Mechanics, Heat, Chemical Engineering, Mathematical Methods
Australian J. Chem.	Australian Journal of Chemistry

-B-

Bull. Acad. Polon. Sci.	Bulletin de l'Academie Polonaise des Sciences
Bull. Chem. Soc. Japan	Bulletin of the Chemical Society of Japan
Bull. Classe Sci., Acad. Roy. Belg.	Bulletin de la Classe des Sciences, Academie Royale de Belgique
Bull. Soc. Chem. Belges	Bulletin des Societes Chimiques Belges

-C-

Can. J. Chem.	Canadian Journal of Chemistry
Can. J. Chem. Eng.	Canadian Journal of Chemical Engineering
Can. J. Phys.	Canadian Journal of Physics
Chem. Eng. Progr.	Chemical Engineering Progress
Chem. Eng. Progr. Symp. Ser.	Chemical Engineering Progress, Symposium Series
Chem. Eng. Sci.	Chemical Engineering Science
Chem.-Ingr.-Tech.	Chemie-Ingenieur-Technik
Chem. Rev.	Chemical Reviews
Chem. Tech. (Berlin)	Chemische Technik, Die (Berlin)
Chem. Weekbald	Chemisch Weekbald
Comm.	Commission
Commun. Math. Phys.	Communications in Mathematical Physics (Germany)
Compt. Rend.	Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences
Conf.	Conference
Contemp. Phys.	Contemporary Physics

-D-

Discussions Faraday Soc.	Discussions of the Faraday Society
Dokl. Akad. Nauk Azerb. SSR	Doklady Akademii Nauk Azerbaidzhanskoi SSR
Dokl. Akad. Nauk SSSR	Doklady Akademii Nauk SSSR

-E-

Econ. Geol. and the Bull. Soc. Economic Geologists	Economic Geology and the Bulletin of the Society of Economic Geologists
Exptl.	Experimental

-F-

Forsch. Gebiete Ingenieurw.	Forschung auf dem Gebiete des Ingenieurwesens
Forschungsh. Ver. Deut. Ingr.	Forschungsheft. Verein Deutscher Ingenieure

-H-

Helv. Phys. Acta	Helvetica Physica Acta

-I-

Ind. Eng. Chem.	Industrial and Engineering Chemistry
Intern.	International
Inzh -Fiz. Zh., Akad. Nauk Belorussk-SSR	Inzhenerno-Fizicheskii Zhurnal, Akademiya Nauk Belorusskoi SSR
Izv. Akad. Nauk Kaz. SSR., Ser. Energ.	Izvestiya Akademii Nauk Kazakhskoi SSR, Seriya Energeticheskaya
Izv. Sektora Fiz-Khim. Analiza, Inst. Obshch. Neorgan. Khim., Akad. Nauk SSSR	Izvestiya Sektora Fiziko-Khimicheskogo Analiza, Institut Obschei i Neorganicheskoi Khimii imeni N. S. Kurnakova, Akademiya Nauk SSSR
Izv. Vysshikh Uchebn. Zavedenii, Fiz.	Izvestiya Vysshikh Uchebnykh Zavedenii Fizika
Izv. Vysshikh Uchebn. Zavedenii, Khim. I Khim. Tekhnol.	Izvestiya Vysshykh Uchebnykh Zavedenii, Khimiya i Khimicheskaya Tekhnologiya
Izv. Vysshikh Uchebn. Zavedenii, Neft i Gaz.	Izvestiya Vysshikh Uchebnykh Zavedenii, Neft i Gaz

-J-

J. Am. Chem. Soc.	Journal of the American Chemical Society, The
J. Appl. Chem. (London)	Journal of Applied Chemistry (London)
J. Appl. Chem. USSR (English Transl.)	Journal of Applied Chemistry of the USSR (English Translation of Zhurnal Prikladnoi Khimii)
J. Chem. Educ.	Journal of Chemical Education
J. Chem. Eng. Data	Journal of Chemical and Engineering Data
J. Chem. Phys.	Journal of Chemical Physics, The
J. Chem. Soc.	Journal of the Chemical Society
J. Chim. Phys.	Journal de Chimie Physique et de Physicochimie Biologique
J. Colloid Sci.	Journal of Colloid Science
J. Franklin Inst.	Journal of the Franklin Institute
J. Gen. Chem. USSR (English Transl.)	Journal of General Chemistry of the USSR (English Translation of Zhurnal Obshchei Khimii)
J. Heat Transfer	Journal of Heat Transfer
J. Imp. Coll. Chem. Eng. Soc.	Journal of the Imperial College Chemical Engineering Society

-J-

J. Math. Phys.	Journal of Mathematical Physics
J. Nat. Sci. Math.	Journal of Natural Sciences and Mathematics, The
J. Phys. Chem.	Journal of Physical Chemistry, The
J. Phys. Colloid Chem.	Journal of Physics and Colloid Chemistry
J. Phys. Radium	Journal de Physique et le Radium, Le
J. Phys. Soc. Japan	Journal of the Physical Society of Japan
J. Polymer Sci.	Journal of Polymer Science
J. Res. Natl. Bur. Std.	Journal of Research of the National Bureau of Standards
J. Tech. Phys. (USSR)	Journal of Technical Physics (USSR)
J. Wash. Acad. Sci.	Journal of the Washington Academny of Sciences
Jena Rev.	Jena Review

-K-

Kriticheskie Yavleniya i Flyuktuatsii v Rastvorakh, Mosk. Gos. Univ., Tr. Soveshch.	Kritcheskie Yavleniya i Flyuktuatsii v Rastvorakh, Moskovskii Gosudarstvennyi Universitet im. M. V. Lomonosova, Trudy Soveshchaniya

-L-

Lab.	Laboratory
LC	Library of Congress

-M-

Mat. Sb.	Mathematicheskii Sbornik
Materialy Ural'sk. Soveshch. po Spektroskopii, Ural'sk. Akad. Nauk SSSR	Materialy Ural'skogo Soveshchaniya po Spektroskopii, Ural'skii Filial Akademii Nauk SSSR, Sverdlovsk, 1958
Mekhanizm i Kinetika Kristallizatsii, Nauchn. Sov. Akad. Nauk Belorussk. SSR po Fiz. Tverd. Tela	Mekhanizm i Kinetika Kristallizatsii, Nauchnyi Sovet Akademii Nauk Belorusskoi SSR po Fizike Tverdogo Tela
Mem. Defense Acad. Math., Phys. Chem. Eng. (Yokosuka) Japan	Memoirs of the Defense Academy, Mathematics, Physics, Chemistry and Engineering (Yokosuka, Japan)
Mem. Fac. Eng., Kyushu Univ.	Memoirs of the Faculty of Engineering, Kyushu Imperial University
Mol. Phys.	Molecular Physics

-N-

NLL	National Lending Library Boston Spa, England
Natl. Bur. Std. Misc. Publ.	National Bureau of Standards (U. S.) Miscellaneous Publication
Nauchn. Ezhegodnik. Chernovitsk. Univ.	Nauchnyi Ezhegodnik Chernovitskogo Universiteta
Ned. Tijdschr. Natuurk.	Nederlands Tijdschrift voor Natuurkunde

-O-

Österr. Chemiker-Ztg.	Österreichische Chemiker-Zeitung
Opt. Spectry. (USSR) (English Transl.)	Optics and Spectroscopy (USSR) (English Translation)
Opt. i Spektroskopiya	Optika i Spektroskopiya
OTS	Office of Technical ~~Sci~~ences, U. S., Department of Commerce

-P-

Pakistan J. Sci. Res.	Pakistan Journal of Scientific Research
Phil. Mag.	Philosophical Magazine, The
Phil. Trans. Roy. Soc. London, Ser. A	Philosophical Transactions of the Royal Society of London, Series A: Mathematical and Physical Sciences
Phys. Fluids	Physics of Fluids
Phys. Letters	Physics Letters
Phys. Rev.	Physical Review, The
Phys. Rev. Letters	Physical Review Letters
Pribory i Tekhn. Eksperim.	Pribory i Tekhnika Eksperimenta
Primenenie Ul'traakustiki k Issled. Veshchestva.	Primenenie Ul'traakustiki k Issledovaniyu Veshchestva
Proc.	Proceedings
Proc. Acad. Sci. USSR, Phys. Chem. Sec.	Proceedings of the Academy of Sciences of the USSR, Physical Chemistry Section
Proc. Natl. Acad. Sci. U. S.	Proceedings of the National Academy of Sciences of the United States of America
Proc. Phys. Soc. (London)	Proceedings of the Physical Society (London)
Proc. Roy. Soc. Edinburgh, Sec. A	Proceedings of the Royal Society of Edinburgh, Section A: Mathematics and Physical Sciences

[continued]

-P-

Proc. Roy. Soc. (London) Ser. A	Proceedings of the Royal Society (London) Series A: Mathematical and Physical Sciences
Progr. Theor. Phys. (Kyoto)	Progress of Theoretical Physics (Kyoto)
Pure Appl. Chem.	Pure and Applied Chemistry

-R-

Rec. Trav. Chim.	Recueil des Travauz Chimiques
Rend. Scuola Intern. Fis. "Enrico Fermi"	Rendiconti della Scuola Internazionale de Fisica "Enrico Fermi"
Rept.	Report, reports
Rept. Progr. Phys.	Reports on Progress in Physics
Rev. Mod. Phys.	Reviews of Modern Physics
Rev. Phys. (Bucharest)	Revue de Physique, Academie de la Republique Populaire Ronmaine
Ric. Sci.	La Ricerca Scientifica
Roczniki Chem.	Roczniki Chemii
Russ. J. Phys. Chem.	Russian Journal of Physical Chemistry

-S-

SLA	Special Libraries Association
Sov. Phys. - Dokl.	Soviet Physics-Doklady
Soviet Phys. - JETP	Soviet Physics - JETP
Stroenie i Fiz. Svoistva Veshchestva v Zhidkom Sostoyanii, Min. Vysshego i Srednego Spets. Obrazov. Ukr. SSR, Kievsk. Gos. Univ., Materialy 4-go Soveshch.	Stroenie i Fizicheskie Svoistva Veshchestva v Zhidkom Sostoyanii, Ministerstvo Vysshego i Srednego Spetsial'nogo Obrazovaniya Ukrainskoi SSR, Kievskii Gosudarstvennyi Universitet im T. G. Shevchenko, Materialy 4-go Soveshchaniya
Symp.	Symposium

-T-

Teploenerg.	Tepoloenergetika
Teplofiz. Vysokikh Temperatur, Akad. Nauk SSSR	Teplofizika Vysokikh Temperatur, Akademiya Nauk SSSR
Termodinam. i Stroenie Rastvorov. Akad. Nauk SSSR. Otd. Khim. Nauk i Khim. Fak., Mosk. Gos. Univ., Tr. Soveshch.	Termodinamika i Stroenie Rastvorov, Akademiya Nauk SSSR, Otdelenie Khimicheskikh Nauk i Khimicheskii Fakul'tet, Moskovskii Gosudarstvennii Universitet, Trudy Soveshchaniya
Theor.	Theoretical
Tr. Gos. Inst. Prikl. Khim.	Trudy, Gosudarstvennyi Institut Prikladnoi Khim
Tr. Moskov. Energet. Inst.	Trudy, Moskovskogo Energeticheskogo Instituta
Tr., Vses. Nauchno-Issled. Inst. Kislorodn. Mashinostr.	Trudy, Vesesoyuznyi Nauchno-Issledovatel'skii Institut Kislorodnogo Mashinostroeniya
Trans. Faraday Soc.	Transactions of the Faraday Society

-U-

Uch. Zap. Kabardino-Balkarsk. Univ.	Uchenye Zapiski Kabardinskogo-Balkarskogo Universiteta
Uch. Zap. Karbardinsk. Gos. Ped. Inst.	Uchenye Zapiski Karbardinskogo Gosudarstvennogo Pedagogicheskogo Instituta
Uch. Zap., Mosk. Obl. Ped. Inst.	Uchenye Zapiski, Moskovskogo Oblastnogo Pedagogicheskogo Instituta
Uch. Zap., Permsk. Gos. Univ.	Uchenye Zapiski, Permskii Gosudarstvennyi Universitet Imeni A. M. Gor'kogo
Cch. Zap., Yakutskogo Gos. Univ. Ser. Estestven. Nauk	Uchenye Zapiski Yakutskogo Gosudarstvennogo Universiteta
Ukr. Fiz. Zh.	Ukrainskii Fizichnii Zhurnal
Ukr. Khim. Zh.	Ukrainskii Khimicheskii Zhurnal
Univ.	University
US At. Energy Comm.	United States Atomic Energy Commission
Usp. Khim.	Uspekhi Khimii
Usp. Fiz. Nauk	Uspekhi Fizicheskikh Nauk

-V-

Vestn. Leningr. Univ. Ser. Fiz. i Khim.	Vestnik Leningradskogo Universiteta Seriya Fiziki i Khimii
Vestn. Mosk. Univ. Ser. Fiz. Astron.	Vestnik Moskovskogo Universiteta, Seriya. Fizika, Astronomiia
Vestn. Mosk. Univ. Ser. Khim.	Vestnik Moskovskogo Universiteta, Seriya II: Khimiya
Visn. Kiivsk Univ. Ser. Astron., Fiz. ta Khim.	Visnik Kiivskogo Universitetu. Seriya Astronomii, Fiziki ta Khimii
Vopr. Sovrem. Fiz. i Mat., Akad. Nauk Uz. SSR	Voprosy Sovremennoi Fiziki i Matematiki, Akademiya Nauk Uzbekskoi SSR
Vses. Konf. Kolloidnoi Khim., Akad. Nauk SSR Otd. Khim. Nauk, Minsk.	Vsesoyuznoi Konferentsii po Kolloidnoi Khimii, Akademiya Nauk, SSSR, Otdelenie Khimicheskikh Nauk, Minsk
Vysokomolekul. Soedin.	Vysokomolekulyarnye Soedineniya

-W-

Wiss. Z. Tech. Hochsh. Chem. Leuna-Merseburg	Wissenschaftliche Zeitschrift der Technischen Hochschule für Chemie Leuna-Merseburg

-Z-

Z. angew. Math. Phys.	Zeitschrift für angewandte Mathematik und Physik
Z. Elektrochem.	Zeitschrift für Elektrochemie
Z. Naturforsch.	Zeitschrift für Naturforschung
Z. Physik.	Zeitschrift für Physik
Z. physik. Chem. (Frankfurt)	Zeitschrift für physikalische Chemie (Frankfurt)
Z. physik. Chem. (Leipzig)	Zeitschrift für physikalische Chemie (Leipzig)
Zh. Eksp. i Teor. Fiz.	Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki
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